

**Abstract**

Disclosed is a gasification technique for converting biomass, which is difficult to treat, into clean gas fuel able to be burned in a cogeneration system.

5 The gasification technique includes first stage fluidized-bed catalytic gasification, and second stage gasification of tar and catalytic reforming to convert nitrogen in tar, and HCN in a flammable gas into  $\text{NH}_3$ , unlike conventional gasification techniques. In addition, since the temperature of a total gasification process is lower than a melting point of ash, powdery ash is generated and thus easily

10 treated. Also, little heat is released due to the low process temperature, and therefore, a compact reactor may be designed to produce gas having a high caloric value. Further, the generated tar is recovered and reused in other processes, and the gas fuel contains a small amount of ammonia.